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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,248	09/16/2003	Daniel J. Rachlin	81634/6776	3739

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EXAMINER	
FORMAN, BETTY J	

ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 06/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/664,248	RACHLIN, DANIEL J.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) *16-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☒ Claim(s) *11-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, Claims 1-15 in the reply filed on 29 March 2006 is acknowledged.

Claims 16-18 are withdrawn from consideration.

Claims 1-15 are under prosecution.

Claim Objections

2. Claims 11-15 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claims are drawn to uses of the system of Claim 10. However, the uses do not define structure of the system so as to further define the system over that of Claim 10.

Claim 14 objected to because of the following informalities: The recitation "can approximated" is objected to because the syntax is incorrect.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 is indefinite for the recitation "the dielectric surface that is exposed" because the recitation lacks proper antecedent basis in Claim 1. It is suggested that the claim be amended to provide proper antecedent basis.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al (U.S. Patent No. 5,776,785, issued 7 July 1998).

Regarding Claim 1, Lin et al disclose a substrate for a biochip comprising a flat mirror surface that reflects excitation light, a transparent dielectric layer coating the substrate (Column 5, lines 10-30) wherein the layer has a thickness such that destructive interference occurs between radiation propagating toward the mirror through the dielectric and away from the mirror (Column 5, line 63-Column 6, line 24).

Regarding Claim 2, Lin et al disclose the substrate wherein the thickness of the dielectric is approximately N/2 wavelength (e.g. penetration layer is 390-280nm when wavelength is 600nm, Column 6, lines 9-12 and Column 7, lines 14-34).

Regarding Claim 3, Lin et al disclose the substrate wherein the mirror is a metallic film deposited on a flat substrate (e.g. gold or silver, Column 7,lines 14-19).

Regarding Claim 4, Lin et al disclose the substrate wherein the dielectric is silicon dioxide (Column 7, lines 25-27).

Regarding Claim 7, Lin et al disclose the substrate wherein the mirror is silver (Column 7,lines 14-19).

7. Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(e) and (a) as being anticipated by Challener et al (U.S. Patent No. 6,320,991, issued 20 November 2001).

Regarding Claim 1, Challener et al disclose a substrate for a biochip comprising a flat mirror surface of the that reflects excitation light (i.e. the bottom surface of the optical sensor is flat (Fig. 3 & 4) and the optical sensor is defined a "mirror", Column 4, lines 26-29), a transparent dielectric layer coating the substrate (Column 4, lines 19-20) wherein the layer has a thickness such that destructive interference occurs between radiation propagating toward the mirror through the dielectric and away from the mirror (Column 3, lines 5-20).

Regarding Claim 2, Challener et al disclose the substrate wherein the thickness of the dielectric is approximately N/2 wavelength (Column 5, lines 50-55).

Regarding Claim 4, Challener et al disclose the substrate wherein the dielectric is silicon dioxide (Column 6, line 20).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 5-6, 9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al (U.S. Patent No. 5,776,785, issued 7 July 1998) in view of Miller et al (U.S. Patent No. 5,418,136, issued 23 May 1995)

Regarding Claim 5 and 6, Lin et al disclose a substrate for a biochip comprising a flat mirror surface that reflects excitation light, a transparent dielectric layer coating the substrate (Column 5, lines 10-30) wherein the layer has a thickness such that destructive interference occurs between radiation propagating toward the mirror through the dielectric and away from the mirror (Column 5, line 63-Column 6, line 24). Lin et al teach the substrate wherein the dielectric is silicon (Column 7, lines 25-27) and wherein binding partners are immobilized via chemical coupling using known techniques (Column 10, lines 24-32) but they are silent regarding treating the surface with amine and do not teach silicon monoxide as a dielectric. However, these elements were well known in the art at the time the claimed invention was made as taught by Miller et al.

Miller et al disclose a substrate for a biochip comprising a flat optical mirror surface that reflects incident excitation (Column 12, lines 30-51 and Column 14, lines 22-45), the surface having a transparent layer coating the surface and providing destructive interference (Column 19, lines 10-20) wherein the surface is functionalized (e.g. with amines) for binding partner immobilization (Column 27, lines 25-47) and wherein the dielectric material is silicon monoxide or silicon dioxide which function equally as an attachment layer (Column 26, lines 45-52). It would have been obvious to one of ordinary skill in the art at the time the claimed

invention was made to modify the silicon dioxide of Lin et al with silicon monoxide. One of ordinary skill in the art would have been motivated to do so with a reasonable expectation of success based on the teaching of equal functionality provided by Miller et al (Column 26, lines 45-52). It would have been further obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the surface of Lin et al with amines. One of ordinary skill in the art would have been motivated to do so based on the suggestion to modify the surface provided by Lin et al (Column 10, liens 24-32) and for the expected benefit of strong adherence to the substrate as taught by Miller et al (Column 27, lines 28-30).

Regarding Claim 8, Lin et al disclose a substrate for a biochip comprising a flat mirror surface that reflects excitation light, a transparent dielectric layer coating the substrate (Column 5, lines 10-30) wherein the layer has a thickness such that destructive interference occurs between radiation propagating toward the mirror through the dielectric and away from the mirror (Column 5, line 63-Column 6, line 24). Lin et al do not teach a plurality of three-dimensional domains attached to the dielectric surface (Column 7, lines 25-27) however, Miller et al teach the similar device wherein the binding partners are applied via inkjet or imprinting or using a mask to provide an array of binding partners (Column 29, lines 63-68 and Column 30, line 66-Column 31, line 31). Hence, the areas to which the binding partners are applied have a dimension extending from the substrate (Fig. 4-6). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the surface application of Miller et al to the substrate of Lin et al. One of ordinary skill in the art would have been motivated to do so for the expected benefit of optimized detection of analyte based on thickness at the binding site as taught by Miller et al (Column 31, lines 21-31).

Regarding Claim 10, Lin et al disclose a substrate for a biochip comprising a flat mirror surface that reflects excitation light, a transparent dielectric layer coating the substrate (Column 5, lines 10-30) wherein the layer has a thickness such that destructive interference occurs between radiation propagating toward the mirror through the dielectric and away from

the mirror (Column 5, line 63-Column 6, line 24). Lin et al do not teach a plurality of three-dimensional domains attached to the dielectric surface (Column 7, lines 25-27) however, Miller et al teach the similar device wherein the binding partners are applied via inkjet or imprinting or using a mask to provide an array of binding partners (Column 29, lines 63-68 and Column 30, line 66-Column 31, line 31). Hence, the areas to which the binding partners are applied have a dimension extending from the substrate (Fig. 4-6). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the surface application of Miller et al to the substrate of Lin et al. One of ordinary skill in the art would have been motivated to do so for the expected benefit of optimized detection of analyte based on thickness at the binding site as taught by Miller et al (Column 31, lines 21-31).

Claims 11-15 are drawn to use of the system of Claim 10 e.g. a source of excitation is used to induce optical emission (Claim 11); destructive interference occurs .....providing a diminution of contaminant optical signal (Claim 12); identifiable pattern of source brightness can be imaged (Claim 13); analyte can [be] approximated by a process.... (Claim 14); and an estimation of analyte quantity can be obtained.... (Claim 15). The recitations of intended use do not further define the device of Claim 10. Because the references teach the elements of Claim 10 and because Claims 11 and 13-15 do not further define the system of Claim 10, the cited references teach the system of Claims 11 and 13-15 as claimed.

The courts have stated that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Conclusion

10. No claim is allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

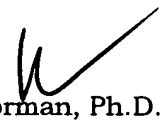
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.



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Primary Examiner
Art Unit: 1634
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